GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . Professor C. S. SARGENT.

ENTERED AS SECOND-CLASS MATTER AT THE POST-OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, MARCH 24, 1897.

TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLE:—Roadside Trees 111
Sculpture in Gardens ..... *William Robinson.* 112
Pinus palustris in France. (With figure.) ..... *Maurice L. de Vilmorin.* 112
FOREIGN CORRESPONDENCE:—London Letter ..... *W. Watson.* 113
PLANT NOTES ..... *P. B. Kennedy.* 114
CULTURAL DEPARTMENT:—American Trees for Ornamental Planting ..... *E. J.* 114
Cymbidiums ..... *E. O. Orpet.* 116
Notes from the Botanic Garden of Smith College ... *Edward J. Canning.* 117
Cypripedium spectabile ..... *Lora S. La Mance.* 117
Cypripedium insigne, var. Mutchianum, Cypripedium Leeanum, var. Zenobia ..... *A. Dimmock.* 117
Removal of Greenhouse Shading ..... *M. G. Kains.* 117
CORRESPONDENCE:—Notes from Gardens in Brookline, Massachusetts, *T. D. Hatfield.* 117
The Rotation of Species of Trees Under Forest Conditions, *Professor L. C. Corbett.* 118
Bibliographical Notes on American Trees.—I ..... *Edward L. Greene.* 119
RECENT PUBLICATIONS 119
NOTES 120
ILLUSTRATION:—Pinus palustris, near Bordeaux, France, Fig. 14 115

Roadside Trees.

WE have often spoken of the beauty of our country highways and byways, especially in hilly and rugged sections, when nature is allowed to furnish beauty and shade in her own way with shrubbery and trees by the roadside. Every one can recall some example of a particular stretch of road which has come to be a personal delight, and then has been made desolate by the wanton work of some pathmaster or property-owner whose land abutted on the highway. In most states it is the privilege of landowners to do what they will with the plants by the roadside in front of their fields, and noble trees have too often in this way been sacrificed to the greed of private owners. Where a venerable tree stands by the wayside it becomes a part of the scenery, and as it has from time immemorial given pleasure to the entire community, every one who passes it feels that he has in some sense a right of property in it. We can recall one instance where three White Oaks had stood for nearly two centuries on a roadside in northern New Jersey. Men well advanced in life had heard their grandfathers speak of them as large trees when they were boys, and in the course of their long existence they had never harmed any one, but had been a source of delight to thousands. One day the owner of the property abutting the road was offered a few dollars for each of the trees by the operator of a sawmill, and in a few hours the trunks of these venerable landmarks were made into sawlogs, and the landscape lost an ornament which could not be replaced in a hundred years.

In most cities the owners of building lots are not permitted to do as they will with the street trees. These cannot be removed without a permit from some municipal authority, and why should not this rule be extended to the country? Certainly, trees are as beautiful and useful along a rural road as in a city street. Indeed, if the landowners in a farm region knew that the beauty of any countryside was a real factor in its money value they would be more careful how they defaced or mutilated the scenery by felling trees and disturbing wayside shrubbery. Many country places receive the largest part of their annual income from sojourners in the summer who leave the city for a season of rest, and the general appearance of the country very often determines the tide of travel. It is, therefore, destructive of their own interests when the inhabitants of any section use the axe to obliterate natural beauty and rob their roads of all shady attractiveness.

Massachusetts began some years ago to enact laws for the protection of wayside trees, and Mr. Christopher Clarke, Trustee of Public Reservations, writes to the *Springfield Republican* to protest against cutting down these adornments of roadways. He asserts that if the destruction continues at the present rate it will not be long before every beautiful wooded drive or shaded road will be stripped bare and have nothing left but a hot and barren road, so that the principal attraction of many Massachusetts towns for former residents or summer visitors will be lost forever. He quotes one law in particular which gives the selectmen of a town, as well as certain city officials, an opportunity to mark roadside trees to be saved whenever a wood lot is to be cut, or when for any cause a tree is in danger, and such designation makes the preservation of this tree permanent. When such a tree is selected for preservation a spike is driven into it with the letter "M" at its head, and these spikes are furnished free by the Secretary of the State Board of Agriculture. Among the provisions of the various laws quoted are these: (1) No person shall cut down or injure any tree on any street or public road in the state; (2) no such tree can be legally cut down by any one except after due notice has been given or made to the selectmen of the town or the municipal authorities and proper consent given; (3) the penalty for cutting down a roadside tree is a fine of not less than $5.00, or more than a hundred, one-half of which goes to the complainant, and the other to the use of the person upon whose property the trespass was committed; (4) a like fine is enforced if a marked tree or any other tree outside the fence or the line of the wood lot or homestead is cut down without authority, one-half going to the complainant and one-half to the city or town; (5) these laws apply to trees before any citizen's residence, farm or wood lot, bordering on any public road or street, and no roadmaster, forester or highway surveyor can cut down a tree without leave specifically granted by the city or town after a proper hearing.

We do not know how many other states have laws of this character, but certainly there ought to be enactments of this nature in every commonwealth. It is not generally known, even in Massachusetts, that some of these laws now exist, and Mr. Clarke asks every editor in that state to copy his letter, so that the people can take advantage of a protection that has been secured for them in the shape of legislation which will, if properly enforced, stop the wholesale destruction of beautiful trees still standing. It is especially urged that city and village improvement societies and rural clubs throughout the state unite in enforcing these laws, and we have no doubt that the conviction of a few offenders will do much to save trees in the future. Another suggestion made by Mr. Clarke is an admirable one: where large and beautiful trees are standing just outside of the line of streets or roads and on private grounds the trees might be purchased and allowed to remain and be marked for protection, so that at a nominal cost a continuous and effective shade could often be secured.

Certainly it has been too long the prevalent opinion that a tree has no value. Telegraph linemen, trolley-road layers and their employers generally have thought nothing of chopping down any tree which chanced to stand in the way of their work. These offenders have sometimes been brought to justice in courts of law, but they too often escape when the trial comes before a jury because these men cannot be convinced that the cutting of a tree inflicts any damage that a grown man can feel. Organization will do much to save the refreshing beauty of our country roadsides. This has already found expression in Massachusetts law, and if the same organization will strive to enforce the law the conviction of a few vandals will inspire

the rest of their class with some wholesome respect for public sentiment if they take no delight in rural beauty.

Sculpture in Gardens.

"IF those restless spirits that possessed the Gadarene swine were to enter into the statues of Edinburgh, and if the whole stony and brazen troop were to hurry and hustle and huddle headlong down the steepest place near the city and into the deepest part of the Firth of Forth, art would sustain no serious loss." This is the picturesque language of Lord Rosebery in a recent speech, and it is quoted by Mr. William Robinson in his paper, *The Garden*, in an article in which he briskly attacks the use of sculpture in gardens. He goes on to say that the *Pall Mall Gazette*, in commenting on Lord Rosebery's words, expressed the wish that the "London monstrosities" would unite for the same sort of rush into the Thames Mr. Robinson's comment is that when politicians and journalists begin to ask for deliverance from the statuary with which city squares and streets are adorned the lovers of nature are not likely to be infatuated with this kind of adornment for gardens, although there seems to be a renewed effort by some writers on garden art to make more of stone and less of verdure. It is often observed that good statues are more rare than good examples of painting or of the other fine arts, and this is one reason why the use of statuary in gardens is rarely effective, because a bad statue, however well it may be placed, can never be pleasing. Sculptors of distinction, as Mr. Robinson reminds us, do not usually concern themselves with garden designs, and when the architects or landscape-gardeners attempt to imitate the human form the work is foredoomed to failure. Probably no one who realizes the proper use of natural beauty in a garden would think of it as a place for exhibiting bad art in stone or cement. Every one has seen beautiful old walls in English gardens, and there is a kind of beauty in the architectural features of the old Italian gardens, although many people suspect that it is the beauty of decay; that the broken columns and crumbling statues are more impressive now than they were in their prime, from the very fact that their dilapidation tells their age and invests them with a halo of romance. However, we will let Mr. Robinson speak for himself, and quote the main part of his article:

Many foreign gardens are bestrown with statues and sculpture, though in northern countries like ours a statue of real value as a work of art deserves to be protected by a building of some kind, and the scattering about of numerous statues of third order of artistic value, or of no merit at all, which we see in some Italian gardens, often gives a very ugly effect. If a place is used for the exhibition of sculpture, well and good. But let us not in that case call it a garden, as it ceases to be one in the true sense. The great costs of such works should preclude their use, if there is no other reason, and getting the many beautiful living things which our gardens may be a home for, is the best use for the money we spend on them. The dotting of statues about the public and private gardens of Paris and London is destructive of repose, exactly in the degree to which it is carried. In Britain, statues are often of cast material, and what their effect is all who have seen them know. The people who use gardens to be spotted about with works of art do not understand that the garden is the best of all places to show the work of nature, and the most beautiful of natural forms is what one should expect to see here. The earliest recollection I have of any large garden or country-seat is of one strown with the remains of statues, and to explain its effect I quote from one of the novels of Monsieur Victor Cherbuliez: "He passed before the open gate of a spacious garden which formerly presented to the admiration of visitors beautifully straight alleys bordered with nicely trimmed globe and cone-shaped Yews, shrubs arranged in angles or in chessboard form or devised to imitate a wall, with sheared trees and statues everywhere. It was one of those classical gardens whose planners prided themselves upon being able to give nature lessons in good behavior, to teach her geometry and the fine art of irreproachable line. But nature abhors such lines. She is a reluctant pupil of geometers, and submits to their tyranny with an ill grace. The garden which Lionel entered had been badly kept after the death of the Baron, and decay had degenerated into ruin. The large basin no longer held any water, and the dolphins which once spouted it from their throats seemed to be asking each other why they were in this world. But the statues had suffered most. Moss and a green damp had invaded them as if some plague or leprosy had covered them with sores, and pitiless time had mutilated and insulted them. One had lost an arm, another a leg, and almost all, their noses. There was a Neptune with a damaged face and nothing left but his beard and half his trident. Rain water stood in the hollow neck of a Jupiter without a head, and a little Pan, with his back against a rock in a thicket, stood where he had blown his pipes for near two centuries, but he had no longer any pipes or hands or breath."

Mr. Robinson adds to this a suggestion which certainly ought to be considered, namely, that while stone will wear away in any climate, it will crumble most rapidly in the cold north, where frosts and thaws and rain and drought occur in such severe succession. Stone-work, wherever it is unprotected in northern latitudes, rapidly disintegrates. The face of a marble statue will be seamed and scarred in a few years, and stone balustrades and terrace-work quickly decay.

Pinus palustris in France.

SO far as I know, the two trees figured on page 115 are the only Long-leaved Pines of respectable size now existing in France. They stand at Geneste, some eight miles from Bordeaux, near the border of the sand hillocks which stretch to the sea and near the famous Médoc district. And yet the Long-leaved Pine once created considerable excitement in France, and large returns were anticipated from planting it. The journals and reviews of about 1830 contain many references to the tree, and François André Michaux read a lecture before the Royal Agricultural Society in praise of its timber. He considered the name Palustris, given to it by Miller, as inappropriate in view of the sandy soil where the forests of this Pine grew, and he added that, if we can judge from the language of Miller himself, there were more specimens of the tree growing in English gardens in the middle of the last century than there were in his own time. Michaux stated that trees near Philadelphia had endured a temperature of fifteen degrees, Réaumur, uninjured, which testified to its hardiness, and considering its ability to grow in the poorest soil, in connection with the beauty, strength and durability of the wood and its capacity to produce turpentine, it ought to become of economic importance in the south and west of France.

In the same year seeds were distributed by the Minister of Agriculture among all who were willing to experiment with them, and quite a quantity was sown in Fromont, the celebrated establishment of Soulange-Bodin, to furnish amateurs with the young plants. Soulange-Bodin made an extensive report in 1831 of his sowings, and referring to the prospects of the tree he says that "it ought to succeed in the Live Oak region," which was an accurate statement.

To return to Geneste. The estate was then owned by Monsieur Ivoy, a gentleman interested in agriculture and forestry, who planted in his park a good many American trees, especially Oaks and conifers. In 1831 he sowed some poor seed of Long-leaved Pine, and the twenty-three seedlings that resulted looked like tufts of grass without stems at the end of the year. Some of these were planted not far from the house, and thirteen years later they were all thrifty but one, the largest being twelve metres high. The only care given to the trees was some superficial hoeing, and last December one of the trees measured eighteen metres in height, and another sixteen metres, while the circumference of the first at one metre from the ground was 1.70 metres, and of the other was 1.50 metres.

Close to these Long-leaved Pines is planted a Loblolly Pine, and the volume of this tree is more than twice that of the Long-leaved Pine. We gather from the notes of Monsieur Ivoy that they were planted the same year. Another plantation of Pinus palustris was made in 1827 by Mrs. Aglaé Adanson in her park near Moulins. Three or four

trees were alive sixteen years later, and they had endured some severe winters; but this is a cold region, and they were killed before they attained any stately proportions. So did most of the trees at Geneste. The two survivors were further from the lake and on higher ground than their fellows. No Loblolly Pines at Geneste have been killed by frost, and a beautiful specimen is living on the small island in a brook hardly above the water-level. Fine specimens of Liquidambar, Bald Cypress, Cedrus, many Oaks, Hickories and Tulip-trees add to the interest of the place, still possessed by the granddaughter of Monsieur Ivoy.

Michaux, as we have said, rather overrated the importance of the Long-leaved Pine for planting in France, and his confidence that it could be grown under the same conditions as the Pinaster and furnish superior and more abundant products in the shape of timber and turpentine was not justified. The Pinaster, or Maritime Pine, as it is commonly called here, can be safely planted in the south-west and west of France, where thousands of acres are planted with pure forests of this tree, although there may occur two or three winters in the century which will freeze the tree in central France. The seed of the Pinaster is abundant, cheap, and can be sown like grass on the heath, and the young seedlings will make long shoots from the first and quickly overtop other growth. The Pinaster also gives prompt returns of wood and turpentine, and trees twelve years old can be cut down to make posts for wine galleries and will give rosin before they are twenty years old, if planted far enough apart from each other. At thirty years it furnishes a fair amount of timber of poor quality, and at forty the tree is old. Again, the Pinaster is an excellent tree to protect the coasts of the south-west against sand-drifts, which formerly advanced from the sea until they were successfully resisted by this tree. Compared with this tree the less hardy Long-leaved Pine will flourish in a more restricted area. It would require greater care and much longer time to grow into merchantable timber. According to Dr. Mohr,* it ought to stand until it is from 90 to 140 years old. The trees at Geneste, although sixty years old, are still practically valueless, while the Pinaster would have paid twice the rent of the soil. Finally, where there is no habitual and fairly large production of any product, the disposition of it at a paying figure is always difficult. Small copses or woods, small forests and individual lots of trees seldom make a profitable speculation. If there were a chance of growing any American Pine in company with or in place of the Pinaster, the Loblolly would be better than the Long-leaved Pine, as it would, at thirty years, afford a greater quantity of timber superior to that of the Pinaster, and which might possibly find a market.

The timber of the Long-leaved Pine imported into this country has been largely used under the name of Pichepin, an evident corruption of Pitch Pine. Struck by the beauty of the wood, many planters in France have tried to grow the tree that produces such fine timber. They have sent to America for seeds of the Pitch Pine, but to the seedsmen of New York and Philadelphia this meant the seed of Pinus rigida, so that nine buyers out of ten have received what they did not want. This confusion arises from the similitude of the two words in different languages. In France, as in America, Pinus rigida will give no timber of the first quality and is good only for fuel. Its place is in the sandy soils in districts too cold for the Pinaster, where the rainfall is large or the water-table near the surface. In rich soils it will grow to form picturesque specimens for parks, but it is not of economical importance in this country.

Paris. *Maurice L. de Vilmorin.*

The Pitch Pine is the most cheerful of our trees in early spring. When seen on a distant hillside it harmonizes perfectly with the yellow sand and the March sunshine; indeed, it has an ingrained sunniness which gives the landscape just the warmth it needs.—*Thoreau.*

---

* *The Southern Pine.* United States Department of Agriculture, Washington.

Foreign Correspondence.

London Letter.

ENGLISH ORCHARDS formed the subject of a lecture by Mr. George Gordon, editor of *The Gardeners' Magazine*, before the Society of Arts on March 3d. Mr. Gordon has for years preached the gospel of English fruit, and last year he sent a specialist to report on the condition of some of the orchards in various parts of England, the result of which he published. It revealed, on the whole, a deplorable state of things, as deplorable as the condition of, for instance, some departments of agriculture in this country. The farmer will not grow wheat nor potatoes at a loss, nor will the orchardist grow fruit which he cannot now sell at a profit owing to foreign competition. It has been shown again and again, by men who have tried, that such products as apples and pears are bad business in England unless one is specially favored. On the other hand, strange though it may appear, it pays to grow these fruits for one's own use; it is only when one goes into the market with his fruit that he finds himself undone by the foreign article. After all, the middleman must live. As to the quality of English-grown apples there can be no two opinions, ours being first, and the rest nowhere. Cox's, Blenheim and Ribston Pippins among the dessert kinds, and Bismarck, Prince Albert, Lord Suffield and Echlinville among cooking varieties, cannot be equaled by the best of imported fruits. Mr. Gordon says that the hundreds of inferior varieties now occupying our orchards should be burnt and replaced by such sorts as those here named, and that apples worth from £10 to £20 per ton are surely more profitable to grow than those which will not realize more than from £1 to £5 a ton. If orchardists saw any chance of obtaining these better prices, no doubt they would hasten to follow Mr. Gordon's advice. Englishmen, even when gardeners and farmers, are not, as a rule, asleep to their own interests. Mr. Gordon says we grow too many sorts. "Before we can make our orchards profitable we must follow the example of the American growers, and instead of planting two or three trees each of a hundred varieties we must plant a hundred trees each of a few varieties, and these of the very best."

PICEA OMORICA.—*The Gardeners' Chronicle* this week publishes a picture of a cone-bearing branch of this, the Servian Spruce, which is represented by a group of healthy young trees in the Kew Arboretum, raised from seeds obtained from Belgrade about ten years ago. It promises to be a good plant for England; at any rate, the Kew plants are exceptional, both as regards health and rate of growth, compared with other Spruces, last year's shoots being from a foot to eighteen inches long. The leaves are less than an inch long, almost flat, instead of being quadrangular, as in other Spruces, with two whitish lines on the upper side. The cones, which are one and a half inches long, are produced in clusters, sessile on the stronger branches, or terminal on the short lateral shoots. The tree is a native of the mountains of Servia, Bosnia and Montenegro. In stature it is said to equal any of the European Spruces. Its nearest ally appears to be P. Ajanensis.—[Picea Omorica was raised in 1881 in the Arnold Arboretum from seeds sent by Dr. Bolle, of Berlin. It has grown rapidly in Massachusetts, where it is perfectly hardy and promises to be a distinct and useful ornamental tree.—ED.]

RHODODENDRON PRÆCOX is one of the greatest treasures we possess as a shrub for beautifying the garden both inside and out in early spring. The mildness of February this year has specially favored it, and the scores of bushes of it in the shrubberies and beds outside have been glorious pictures of rosy mauve for the past fortnight. Nothing could be more beautiful, and I would class it with Forsythia suspensa, Magnolia conspicua, M. stellata and Jasminum nudiflorum as a first-rate early-flowering hardy shrub. It is, of course, as hardy as the Alpine Rose, but a snap of frost is apt to spoil its often too venturesome flowers. Indoors it is almost equally valuable, for it forces

well and the flowers last and keep their color. Its near ally, Rosy Bell, is almost as useful. These two plants are hybrids, for which we are indebted to Messrs. Davies, of Ormskirk, near Liverpool. R. Nobleanum is also exceptionally good this year, the flowers being large and bright in color. It has been in flower out-of-doors since the middle of February.

Cypripedium Fairreanum.—As bearing upon the subject of raising rare and valuable Orchids from seeds obtained artificially and without crossing, which I suggested in one of my letters as worthy consideration, the following is interesting: In the Journal of the Agricultural-Horticultural Society of India for December, 1896, p. 534, it is stated that Messrs. F. Sander & Co., St. Albans, will give £1,000 for an importation of Cypripedium Fairreanum, the habitat of which is unknown, but is suspected to be Burma. The same firm also offer £1,000 for a good plant in flower of C. insigne, with the flower pure white and of normal size. The albino is not likely to be forthcoming, although seeing how many albino sports among Orchids are now known, such a plant may possibly be found. The importation of C. Fairreanum, however, ought not to be difficult. It is estimated that a pod of Cypripedium contains about four million seeds; Cypripedium seeds vegetate freely and plants are quickly grown from them; a pod of ripe seeds of C. Fairreanum ought, therefore, on this showing, to be worth a considerable sum.

Bertonerila.—This is a composite name for a bigeneric hybrid between Bertolonia and Sonerila. Bertolonia is a genus of some six species, all South American, while Sonerila is East Indian and comprises some fifty species. According to the *Genera Plantarum*, the two genera belong to different sections of Melastomaceæ. We owe the cross to Monsieur Linden, of *L'Horticulture Internationale*, Brussels, who publishes figures and descriptions of six varieties with popular names. The characters of the two parents are evident in the foliage of the hybrids, which are blotched and spotted with white and rose on a green ground. The names of the parents are not given, but I suspect they are B. maculata and S. Hendersoni, or near allies of these. For furnishing the surfaces of large pots in the Orchid-house or stove we find Sonerilas and Bertolonias most suitable, and, no doubt, these Bertonerilas will be equally serviceable.

Pitcairnia corallina.—The Pitcairnias are considered either weedy or too botanical by cultivators, but this species deserves to be ranked with handsome winter-flowering stove plants. It forms a tuft of erect lanceolate Curculigo-like leaves a yard or more high, and in February it develops its flower-spikes; these are short, horizontal or turned suddenly at right angles just above ground, projecting outward about a foot and clothed with bright crimson tubular flowers from one to two inches long. A well-grown specimen in a shallow pot a foot across will produce half a dozen flower-spikes, which last in perfect condition several weeks. There are also two hybrids between this species and P. Altensteinii, which were raised by continental growers a few years ago and which possess most of the good points of P. corallina. This species is a native of Colombia, whence it was introduced by Monsieur Linden in 1874.

Cyclamen Persicum Papilio.—I mentioned this new sport a few weeks ago, when examples were submitted to the Royal Horticultural Society by the raiser, Monsieur Vervaene de Langhe, the Brussels nurseryman. He has lately forwarded a collection of the flowers to Kew, together with an account of the origin and development of the sport. Twelve years ago he started to select and breed the Persian Cyclamen for an improved leaf coloration. Among the seedlings thus obtained he observed one which showed broad horizontal petals with crisp margins. These characters were reproduced in the seedlings obtained from this sport, but they were all mauve-colored. To get variety of color he crossed them with other colors and selected the best from the progeny, breeding from these again. He has now numerous seedlings of varying shades of color from white to purple, and all showing the peculiar pose and crispness of petal which distinguishes this from all other sports obtained from the Persian Cyclamen. Either we are better acquainted with the cultural requirements of this plant than we used to be, or, what is more likely, breeders have improved the constitution of the plant by crossing and selecting, for it is cultivated with far more success than formerly, some growers producing easily in about twelve months from seeds plants which twenty years ago would have been considered miracles by the most expert growers.

London. *W. Watson.*

Plant Notes.

Begonia Lyncheana was introduced from Colombia about 1877 by Monsieur Roezl, who sent it to Monsieur Bernary, of Erfurt, Germany. It was distributed under the name of B. Roezlii, but as there was already a Begonia of that name, Sir Joseph Hooker renamed it in compliment to Mr. Lynch, the curator at Cambridge, who had been the means of its becoming known in England. Mr. John Coulson, of Worcester, Massachusetts, says that he has grown B. Lyncheana from the original stock of Bernary and finds that it is almost the same as B. semperflorens gigantea rosea.

Begonia semperflorens gigantea rosea is one of Lemoine's hybrids introduced in 1888, being a cross between B. semperflorens and B. Lyncheana. It is one of the very best greenhouse plants we have, has beautiful deep green foliage, and produces an abundance of flowers of a rich shade of rosy red. As it flowers from October to May, it is especially valuable for winter decoration of all kinds. I am of the opinion that the hybrid has almost reverted back to B. Lyncheana, or that the semperflorens type has not entered sufficiently into the cross to enable us to keep them distinct. A description of this hybrid, from plants growing at Cornell, is appended:

Rootstock woody, stems succulent, about three feet high, smooth, green. Leaves on short petioles, ovate or reniform, toothed at the margins, about seven inches across, bright green, with a spot of red at the base of the sinus, tinged with red on the under side. Peduncles axillary, stout, four to eight inches long, bearing large panicles (six to eight inches in diameter), of large rosy red flowers. Males with two ovate petals three-quarters to one inch across; females with two to four petals somewhat smaller, ovary three-angled with broad rounded wings. We are able to determine no greater difference between Begonia Lyncheana and the Gigantea rosea than would occur between plants arising from the same stock. For further information regarding these plants, I would refer to *Botanical Magazine*, t. 6758; *Journal Royal Horticultural Society*, xv., 15, January, 1893; *Regel Gartenflora*, 1876, page 194, plate 871; *Nicholson Dict. Gar.; The Garden*, xxiv., page 162, plate 402; xxv., pages 489 and 534; xxvii., page 417; xxix., page 206; *Gardeners' Chronicle*, 1884, page 774; Garden and Forest, ii., page 113, March 6th, 1889; *American Gardening*, xv., page 346, October 12th, 1895.

Cornell University. *P. B. Kennedy.*

Cultural Department.

American Trees for Ornamental Planting.

At the meeting of the Lenox Horticultural Society, on the 4th of March, Mr. B. M. Watson, of the Bussey Institute, read a paper entitled "Some Native Trees and Shrubs," in which he commended many of the wild plants growing about the Berkshire Hills as in every respect equal, and oftentimes superior, to imported garden shrubs and trees. He invited attention to the fact that the Arnold Arboretum was a living museum of the woody plants hardy in eastern Massachusetts, and that the plantations had now reached a stage of growth from which it is possible to learn many useful lessons. It offers, at least, an opportunity to study our native trees and compare them with each other and with those from other countries. Many foreign trees, like the Scotch and Austrian Pines, the English Oak and the Sycamore Maple, which had been largely planted in this country, do not thrive under New England conditions. European Beeches, White Willows and many Japanese and Asiatic trees and shrubs are thoroughly

adapted to our soil and climate, and some of them harmonize with native species which have not been generally planted, and which, indeed, it has been difficult to obtain because nurserymen have not kept them on sale, and it has been harder to obtain many native shrubs and trees than to secure plants from distant continents. Fortunately, American nurserymen are now giving greater attention to our needs in this direction, they are propagating our native trees in quantities, and the supply promises to be abundant. In speaking of native trees for ornamental planting, Mr. Watson omitted many of our best trees because they have been largely planted and their qualities are well known. Among these are the Sugar Maple, the Buckeyes, the Tulip-tree, the Chestnut, Catalpa, Elms, Ashes, Kentucky Coffee-tree, Box Elders, Hop Hornbeams, Poplars, Locusts, Prickly Ash, with all the conifers and broad-leaved evergreens; but I send in a condensed form some of his notes on certain trees which ought to be more widely used, omitting the shrubs for the present.

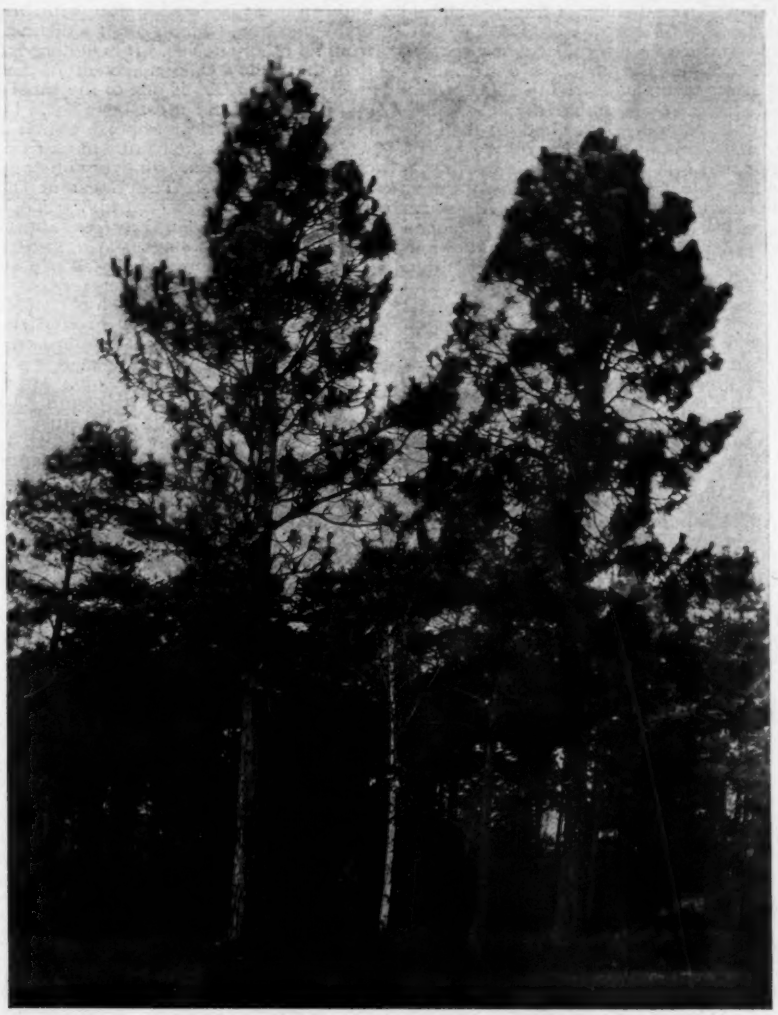

Fig. 14.—Pinus palustris, near Bordeaux, France.—See page 112.

The Scarlet Maple, or Swamp Maple, is a smaller tree than the Sugar Maple; it is of slow growth, sturdy habit and good proportions, suitable for either swampy or well-drained ground, although it is usually found in the former situation. Its special merits are its scarlet flowers in very early spring, which are followed by scarlet fruit, while in autumn its foliage is of the brightest yellow and scarlet. Its bright scarlet twigs in winter should also be noticed. It is an admirable tree for the borders of ponds and along the banks of streams. A most pleasing effect can be obtained by planting it with the White Willow, as its red flowers and fruits, together with the yellow "pussies" of the Willow, give distinct warmth to the landscape in early spring. Acer spicatum, the Mountain Maple, is a small tree and often a tall shrub in the north, with a good habit of growth. The coloring of its abundant fruit in early autumn is very interesting. It succeeds well in partial shade, and is a good plant for any use wherever a rapid-growing tree of moderate size is needed.

Amelanchier Canadensis, the Shad-bush, in all its forms, is a thoroughly good plant. It gives a mass of flowers in early May, and when well grown it makes a symmetrical small tree. The fruit is edible, and its foliage is interesting at all seasons, although it is sometimes attacked by the cluster-cup, a fungous growth, against which no remedy is as yet known. This plant varies widely in form and size, some varieties being low shrubs, while others make sturdy trees forty feet or more in height.

The Canoe Birch is somewhat slow in showing its pure white bark, but when this feature comes it remains, and the tree is a long-lived one. The glittering trunk and the airy head of the mature trees give them an especial beauty. The Yellow Birch is a sturdy, broad-headed tree with lustrous bark. The Black Birch, with its fragrant branchlets, its beautiful aments in the spring and its clear green foliage, is attractive all the year round. The Red Birch has a richly colored bark, and all are trees of singular grace and beauty, and have a certain distinction which adapts them for use in the most pretentious parks.

Cercis Canadensis, the Judas-tree, is better known in cultivation than many of the trees of our native forest, and it is a first-rate small tree for planting among larger ones in open spaces or on the borders of heavy woods. This, together with Cornus florida, the Flowering Dogwood, succeeds admirably in such a position where there is abundant light or air, and both flower abundantly in the early season. No imported trees equal them for such positions.

Cladrastis lutea, the Yellow-wood, is also well known to us in cultivation, and is really one of the best of our trees of medium size. It combines symmetrical growth, fine foliage and handsome flowers. It is particularly good when used as a single specimen. One peculiarity should be noticed, and that is, the trunk often divides near the ground, and this is a source of danger, as the tree sometimes splits apart. One of the stems should be removed when the tree is small, so that the other one can develop symmetrically, or the two should be firmly bolted together.

The American Hawthorns are all useful at every season, and Cratægus cordata, C. coccinea, C. tomentosa and C. crus-galli are all good where showy fruit is desired in autumn and early winter. They will make impenetrable thickets where needed, and perhaps they would make better hedges than the famous English Hawthorn. Without enlarging on the special beauties of form and fruit and foliage in each, it is worth saying that they are all admirable trees for parks and gardens either in masses or in single specimens. Our American Beech is not planted nearly as often as the Purple Beech, a variety of the European species, but its fine trunk and singularly smooth gray bark ought to commend it to every planter. Magnolia macrophylla is rarely found in northern gardens and shrubberies, perhaps because it is difficult to carry through its first few years. When once established, however, it seems to be thoroughly hardy here in Massachusetts, and gives great satisfaction. The flowers are often more than twelve inches in diameter and the leaves more than two feet long. It is altogether the showiest and most tropical in appearance of any of our hardy trees. It does best in soil containing peat, and is benefited by copious waterings in hot July and August weather. All Magnolias thrive in peaty soil, and the best Chinese Magnolias I know are growing in a well-drained and protected swamp.

The American Crab Apple is not only one of the best of the flowering Apples now so justly popular, but when compared with the better-known Pyrus spectabilis and Pyrus floribunda and their varieties, it has two peculiarities worth mentioning. The first is the lateness of its flowering time, which comes from ten to fifteen days after other apple blossoms have formed; and, secondly, the exquisite perfume of its flowers. These peculiarities are both desirable and ought to commend this much neglected tree.

The Sassafras is one of the most attractive trees in our forest. In eastern Massachusetts large specimens are rare, because it is said that the early settlers dug them up so as to export the roots and bark, from which they derived a considerable income. Here along the Connecticut valley, however, there are some noble specimens. The Sassafras is not a hard tree to grow and responds quickly to kind treatment and good soil, and its distinct form and dark green foliage, its well-proportioned head and general clean appearance make it highly desirable.

The Bald Cypress, Taxodium distichum, is a tree of striking individuality. Unfortunately, it is somewhat tender in New England, but if set in a sheltered place and some extra care is given to it when first planted it can be grown to fair size, say thirty feet in height or more, and a ripe age. The foliage is most graceful and pleasing in color.

Our common American Linden, or Basswood, and the Southern Linden, Tilia heterophylla, when compared with the more commonly planted European Lindens, are certainly more desirable. The native trees are better on account of their larger and handsomer foliage, which does not fall as early in the autumn as that of its European relatives, and its flowers come later. These are clean, wholesome trees which are beautiful all the season through.

The Hickories are said to be slow-growing trees, but in the Arboretum I have observed that for the first ten years or so their growth compares favorably with that of our other hard-wooded trees. The Shell-bark Hickory, the Big Shell-bark and the Bitternut have attained a height of from twelve to sixteen feet in ten or twelve years and, as yet, show no signs of stopping. Much is due, perhaps, to the care with which they are treated. The plants are grown from seeds in boxes in the greenhouse, and thus they develop fibrous roots in great quantity. They are permanently planted in carefully prepared soil when less than a foot high. Nurse plants of native shrubs are provided to give them protection, and these are cut as soon as they interfere with the growth of the trees, a treatment which ought also to be given to our Oaks and the Beech. A well-grown Hickory is a tree of great dignity and beauty, and yet very few of them have been planted in American parks.

American Oaks also have the reputation of being slow growers, but this is not deserved, except in the case of a few species. The White Oak and the Bur Oak, especially its variety olivæformis, are certainly not rapid growers. The Scarlet Oak is moderately slow in its early stages, but it is so attractive in its autumnal foliage that this fault, if it is a fault, must be overlooked. The Black Oak develops rapidly, and the Swamp White Oak, although not among the most rapid growers, is a finely shaped tree and always interesting in bark and foliage. The Laurel Oak is perfectly hardy in the Arboretum, and is a most interesting tree with bright, glossy leaves, long and lanceolate, which give it a distinct look and distinguish it from all other species. It is better for New England planting than the Willow Oak on account of the tenderness of the latter tree. The Pin Oak is one of the most rapid-growing species, and it is one of the most beautiful. It is distinguished by its fine and symmetrical proportions and its bright glossy foliage. Although it lacks the beauty of many other Oaks in autumnal coloring, it is so good for every other purpose that it can hardly be planted amiss. The Chestnut Oak grows well. It has admirable foliage, distinct and clean, of beautiful shape and color. The Red Oak, Quercus rubra, is a noble tree, and, at least in its earlier stages, is a most rapid grower. Acorns planted in the autumn of 1895 made seedlings two feet high in the summer of 1896. The average growth of some hundred plants was over eighteen inches. Of course, this was in well-prepared soil. In the open ground the safest way, undoubtedly, is to plant it in boxes and thus secure fibrous roots. The Red Oak is one of our largest trees and is distinguished by rare beauty of form and foliage. It is the most satisfactory, perhaps, of all the Oaks for planting singly in avenues or in masses. Of course, it is hard to use Oaks for street planting, inasmuch as trees from ten to fifteen feet high are required, but with care and frequent transplanting in the nursery this can be accomplished, and for this use the Red Oak, the Pin Oak, the Chestnut Oak and the Black Oak are to be recommended in the order given.

It will not answer to treat our trees carelessly because they are native. The soil should be prepared for the commonest of our native plants with the same care that we would exercise if we were planting some high-priced novelties from Manchuria. Much depends on having a deep, rich loam, containing organic matter—humus in the form of peat, leaf-mold or well-rotted barnyard manure—which will tide newly set plants through the first few years of their life, and especially through our hot July and August weather. It is also generally desirable to use as far as possible small or moderate-sized plants. Of course, the immediate effect is not as striking as when larger trees are used, but the first cost and the percentage of loss is much smaller, and the result at the end of five years or so is usually much more satisfactory.

Lenox, Mass. *E. J.*

Cymbidiums.

THE complaint is often heard that Orchids as a family are far from being ornamental when not in flower, and to the ordinary observer there is nothing to be admired in a house of Cattleyas when the plants are not in bloom, although to the cultivator or connoisseur there is not a day in the year when these plants are devoid of interest. The charge of looking ugly or commonplace cannot be brought against the Cymbidiums as a genus, for even when not in flower they are striking in appearance, especially when seen as large specimens, and many of the species last so long when in bloom that they are among the most decorative of garden plants. There are no difficult subjects in this genus. All of them are terrestrial plants and require a compost that has a basis of loam with enough Fern fibre and broken bricks to make it porous, and they can be easily grown in a moderately cool house. A minimum temperature of fifty degrees in cold weather will suit them better than a higher one, for we have observed that to make some of the species, such as C. Lowianum and C. giganteum, flower freely it is best, after the growing period in fall, to keep them somewhat drier and cooler, to prevent a tendency to start into a second growth, which invariably prevents the production of a full quota of strong flower-spikes.

Cymbidium eburneo-Lowianum is a plant of hybrid origin, as its specific name indicates, and it was originally distributed by the Messrs. Veitch some eight years ago. As it is the off-

spring of two of the best-known species it is regarded as a triumph of the hybridist's skill. A short time since Mr. George MacWilliam, of Whitinsville, Massachusetts, received a first-class certificate for two plants exhibited before the Massachusetts Horticultural Society of this same cross which showed marked differences from the Veitchian hybrid as shown by the colored figure in *The Garden* of October 5th, 1895. This improvement is not surprising, as the parents were both very fine forms of the two species, and the brighter coloring of the petals and sepals and greater portion of the lip, that is colored bright red, marks these two plants as distinct improvements on the original as figured by Mr. Moon in *The Garden*. Mr. MacWilliam states that the plants are but four years old from seed, and while only two have flowered this season out of the great number he has raised from the pod of seeds, many more will probably be strong enough next winter, and it will be interesting to mark the variation in the individuals, if there is any. This clever hybridist has found that no two individuals can be depended upon to come alike from the same seed pod, the variation being great, both in the plant and flower. Another remarkable fact concerning the seedling Cymbidiums is, that while the strongest have flowered this winter there are many tiny plants just appearing on the benches and on various pots that are obviously from the seeds sown at the same time.

There are many surprises always in store for the hybridizer, and the interest that attaches to a lot of seedling Orchids cannot be described in words. It has just been demonstrated by Messrs. Veitch that albinos occur among Orchids raised from seeds produced by colored parents, as in Lælio-Cattleya Decia alba, figured in *The Gardeners' Chronicle* (February 20th, p. 121), and another clever operator has shown that albinos can be produced true from their own seed. Mr. Cookson has raised Cypripedium Lawrenceanum Hyeanum from seed, and the plant has flowers that are even larger than those of its parent. It is a form of C. Lawrenceanum without the purple in the flower, the white and pea-green giving a beautiful effect, and it will be an inducement for hybridizers to attempt to reproduce the exquisite yellow C. insigne Sanderæ true to itself rather than to adulterate it with foreign color.

South Lancaster, Mass. *E. O. Orpet.*

Notes from the Botanic Garden of Smith College.

ALTHOUGH the Japanese Red-bud, Cercis Chinensis, winter-kills badly in this neighborhood unless it is well protected, it is one of the best shrubs we have tried for forcing. It is just now (March 1st) one of the most conspicuous objects in a cool greenhouse; the lovely pink blossoms are larger than those of our native Red-bud, and are borne in greater profusion. Our plants were lifted and potted last fall and stored away in a deep frame until three weeks ago, when they were brought into the greenhouse. Another good plant for this purpose is Berberis aquifolia. We use the same plants every winter, and they are producing twice as many blossoms now as they did three winters ago, which was the first winter we tried them. Magnolia stellata forces well, but the blossoms do not last more than four or five days. M. fuscata, an evergreen species from China, is just coming into flower. Daphne Cneorum is one of the very best plants we have for forcing. The sweet-scented pink flowers are borne in terminal clusters on each of its many branches.

Among herbaceous plants now in flower none are more beautiful or make better potted plants than the common Bleeding-heart, Dicentra spectabilis. The English Wallflower and Brompton Stocks are in full bloom and are very sweet. Seeds of both were sown last April, and the plants grown on in pots all summer. Auriculas grown from seed sown last April have produced good-sized blossoms, some measuring one and a half inches in diameter.

Northampton, Mass. *Edward J. Canning.*

Cypripedium spectabile.—I once saw a remarkable display of this beautiful pink and white Lady's-slipper in Minnesota. At the foot of a little hill, overshadowed by the boughs of trees and watered by a trickling rill on one side and a reedy lake on the other, was a small peninsula that was completely covered with tall, rank Cypripediums in full bloom. The curious inflated flowers, flamed and rayed with clearest pink-purple, were the largest I had ever seen, the foliage the most luxuriant, and the plants the tallest. The spectacle presented by scores upon scores of these great flowers lighting up the wilderness which man had rarely penetrated was really magnificent. And can we not here find a hint for those so fortunate as to possess shady grounds sloping down to a brook or pond? Wherever this queen of our native Orchids is yet to be found it can be naturalized in some such appropriate nook in the garden. Plants can be removed from their native haunts in spring and summer with tolerable success, if the transplanting is done with care. But they will be thriftier and more apt to live if moved in autumn while the plants are dormant. The wide, plaited leaf is so peculiar that it is easily recognizable, even when hanging limp and brown on the dead stalk. In places where wild plants are not available the roots can now be bought in quantity at reasonable prices.

Pineville, Mo. *Lora S. La Mance.*

Cypripedium insigne, var. Mutchianum.—This plant seems to deserve a varietal name for its distinct and beautiful form, its great size, firm texture and prominent markings. It appeared among a group of the popular Cypripedium insigne montanum in Mr. J. E. Rothwell's collection at Brookline, Massachusetts, and he has dedicated it to his gardener, who maintains a large collection of Cypripediums in vigorous health. The most distinct characteristic of the flower of the new plant is its long dorsal sepal, fully half of which is pure white, the basilar portion being studded with deep chocolate-colored spots surrounded with numerous smaller spots of the same color. The inferior sepal is pea-green, sparingly spotted with light brown; the petals have thick lines of spots, deep brown in color, which become obscure near the extremities; the pouch is yellow, with a light bronze suffusion, the staminode being rich shining yellow. It is one of the many desirable varieties of this popular Orchid, and is represented by a fine well-grown specimen.

Cypripedium Leeanum, var. Zenobia.—This is closely allied to Cypripedium Leeanum delicatum, a hybrid obtained from C. insigne Sanderæ and C. Leeanum. It differs, however, from any yet flowered by its almost white dorsal sepal, a few lines of very minute spots radiating from the base and two lines of light reddish spots running through the centre; the petals are very pale yellow, with rows of small reddish brown spots, the tips being absolutely pure white; the labellum is bright yellow with a faint brown suffusion; the staminode is clear lemon-yellow. It flowered for the first time in the collection of J. E. Rothwell, Esq., Brookline, Massachusetts, among a group of plants of unrecorded parentage, and although many of the finest existing varieties are grown here, this is the most striking of those which have yet flowered.

New York. *A. Dimmock.*

Removal of Greenhouse Shading.—When the naphtha-white-lead mixture is used for shading greenhouses it is often difficult to remove the lead, since it adheres tenaciously to the glass. If the lead used be unadulterated it may be softened and in part removed by an application of diluted vinegar or acetic acid. This acid converts the basic carbonate (white lead) into the soluble acetate, part of which dissolves and runs away, while the remainder can be more easily rubbed off if still wet. It was found by experiment that a mixture of about one part vinegar to four of water was very successful, and that the solution could be used effectively several times, depending upon the strength of the vinegar. If the lead has been adulterated with barium sulphate, the common adulterant, the barium will peel off of itself or can be more easily removed by scraping than when the lead is pure. Barium sulphate will not yield to the vinegar, since it is very insoluble.

Ithaca, N. Y. *M. G. Kains.*

Correspondence.

Notes from Gardens in Brookline, Massachusetts.

To the Editor of GARDEN AND FOREST:

Sir,—Brookline, Massachusetts, has long been noted for its community of interesting gardens. A visit at this season of the year is naturally confined to the inspection of the many interesting collections of plants under glass, although beautiful trees and shrubs are not without attraction even in winter.

Professor Sargent's remarkable collection of Indian Azaleas here is yet in winter quarters in deep pits, except a few plants of the earlier varieties, which are being brought into bloom by gentle forcing. The season will thus begin now, and continue through the splendid display in May and June, and a few will be held until July. Imantophyllums have done well here this year and wherever I have seen them. These evergreen Amaryllids have always seemed coarse to me, but it must be admitted that well-bloomed specimens of the deeper orange-flowered varieties are handsome, and their colors combine effectively when properly used. They are

here set on the ground level, and thus appear to good advantage. This appears to be the best season to bring them into flower, for I have noticed when they have been held in check in cool houses to retard the flowering season they have not done so well. Mr. Harris, gardener to Mr. H. H. Hunnewell, tells me when they have been advanced in cool houses to the bud stage, and are then taken into warmer quarters to bloom, they expand to almost twice the size they would be if grown continuously cool. Mr. Sanders, gardener for Professor Sargent, is an enthusiast in growing Begonias. A selected seedling from B. insignis shows up remarkably well in this large collection, and compared with the type is far more ornamental. A handsome plant of B. Ferdinand de Lesseps, a shrubby greenhouse hybrid, has made wonderful growth. It is a summer bloomer, and later will be a mass of white flowers. Streptocarpus Wendlandii is just coming into bloom here. Like some of the older varieties, it produces only a single leaf, but of very large size. The leaf itself is not without beauty, and, reflexing, gives the plant a peculiar one-sided appearance. The flowers, however, are neither as large nor as handsome as one would expect, and are, in fact, smaller than those of the newer hybrids. The Cherokee Roses, already in bloom, give promise of hundreds of flowers each day in the near future. The large single white flowers are really handsome, and it is surprising that such a lovely Rose is not more generally grown as a cool-house climber in the north. Some of the retail florists have tried it, but it does not seem to satisfy the popular taste, which prefers double flowers. Some new hybrid Hippeastrums, recently imported, look promising in one of the houses, and some are already in bloom. The elimination of the green band is nearly complete, and shows what careful hybridization can accomplish. A pan of the white Grape Hyacinth, Muscari botryoides, var. alba, was perfection itself. These less common bulbs grown in this way are very effective. In the grounds I noted one of the original plants of Berberis Thunbergii, now a bush about nine feet in diameter and five feet high, and about fifteen years old. It is in excellent health and shows its value for permanent planting.

At Dr. Weld's place I found a fine collection of stove tropical plants. That handsome, but deadly, Aroid, Dieffenbachia, is here represented by several handsome plants. This native of tropical South America is valuable on account of its luxuriantly spotted foliage. Among the most highly ornamental plants seen here is Heliconia aurea striata, with large Maranta-like foliage, striped and spotted with yellow. It is allied to the Banana family. Licuala grandis, a rare and beautiful Palm from the South Sea Islands, makes a beautiful display here. Until it was recently rediscovered in limited numbers, the large plant in the collection of Mr. H. H. Hunnewell was one of only four or five known in cultivation. The beauty of its almost circular and purely palmate leaves is not approached by any species of the entire Palm family. Pavetta Borbonica is a beautiful foliage plant of slow growth, and resembles a dark green spotted Ficus, with opposite leaves. It is allied to the Ixora. Other plants noted in Dr. Weld's houses were specimens of Dracæna gracilis, a distinct and beautiful species with long, narrow, recurving foliage, slightly tinted with purple. Its value lies in its distinctness. Cypripediums are among the few greenhouse Orchids with handsome foliage. They are here represented by some beautiful pans of C. Lawrenceanum and C. callosum, besides a varied general collection. Curmeria (Homalomena) Wallisii, a noteworthy plant, looked like a dwarf Dieffenbachia, but on close inspection we find the leaves are leathery, its stems are different, and it is of much slower growth and difficult to cultivate. A splendid show of Cinerarias and Cyclamens makes one house bright with color, while some standard plants of Acacia pubescens and A. heterophylla serve to relieve what would otherwise be a surfeiting impression, for some of these gorgeous displays seem almost too showy. Among the Cyclamens are such good varieties as Rosy Morn, Alba magnifica, Mont Blanc and Brilliant.

Wellesley, Mass. *T. D. Hatfield.*

The Rotation of Species of Trees Under Forest Conditions.

To the Editor of Garden and Forest:

Sir,—Considerable discussion has been occasioned by the questions in regard to reforestation in the first report of the Chief Fire Warden of Minnesota. This problem of forest perpetuation and forest rotation is an interesting study. The opinion often stated is that the natural rotation in species of forest trees is a necessary result of an impoverished condition of the soil; that one species or family takes a different food from another, and after one species has taken the nutriment it prefers there is not enough food remaining for a second crop, so that another kind steps in, a kind that relishes and thrives upon the plant-food that remains. But this idea of soil impoverishment under natural forest conditions is in opposition to all modern teaching. It is held, nowadays, that the forest is a restorer of plant-food, so that one crop of trees leaves the soil better for having sustained it. Forest rotation or the succession of species is not, therefore, sustained by the theory of deficient nourishment. Even if we were to specialize and attribute the phenomenon to a single ingredient of plant-food, the hypothesis would still be inadequate, for all classes of forest trees take the same foods in slightly varying proportions only.

But if variation in the condition of the soil does not serve the purpose, will a consideration of the tree's reproductive organs solve the problem? The Pine family is capable of producing, and frequently does produce, an abundant seed crop. Failure to reproduce itself cannot then be attributed to lack of seed-production. Are these seeds prepared to withstand adverse conditions? No, they have no hard nutty covering as do those of the Oaks and Hickories. The seed, while provided with wings to facilitate its transportation, soon loses its vitality if exposed even to the conditions of the natural forest. In other words, the Pine seed must find congenial surroundings for germination soon after it is shed from the cone, or it perishes. Pines do not produce seed each year in succession, and consequently the loss of the seed crop of one season may delay a stand of young seedlings for several years. Young seedlings of most trees are tender as regards adverse surroundings, and this is especially true of the Pine. When favorably lodged, however, the seeds of the Pine germinate readily and the young seedlings thrive under proper conditions of shade and the like, but with our lack of system in forest management these congenial conditions for germinating the seed and developing the young seedlings are rarely provided. When a propitious environment chances to be present, the White Pine reproduces itself readily.

Since, then, other species are more commonly the successors of the Pine than its own kind, it stands to reason that the conditions have been too severe for the reproduction of the Pine. It is also an indication that other species are more virile than the Pine. Is there in nature any reason for this? If the theory of a natural progression from the lower to higher forms in the organic world is to be maintained, there is ample reason for these peculiarities of rotation or succession of species.

According to Gray, the Pines are the oldest representatives of our forest flora. The giant Sequoia is a lone survivor of a great, and at one time numerous, group of plants. The Gingko, a native of the orient, is at present reduced to the stand of a monotype species. Formerly it undoubtedly had many coördinates. The Sequoia, the Ginkgo and the Pines all belong to the same general scattered family of Coniferæ. It is known that there are among this family representatives of once prosperous genera. What does this mean? Simply this, that the great order Coniferæ is slowly and gradually losing ground in the natural competition for supremacy. They are, in other words, less virile than many of their competitors. More congenial conditions for growth and development must be provided for them than for other species with which they now have to contend. Then, again, if we examine the structure of the floral or reproductive apparatus of the Pine we find it less highly developed than the same organs in their more successful rivals. This indicates that the Pine is less highly organized than other trees. The more highly a plant or animal is organized, or the more complex its differentiation, the more capable it becomes of adapting itself to slightly changed conditions. The low position in the scale occupied by the Pine, to an extent, explains why it does not reproduce itself. In fact this, to my mind, is the keynote to the whole situation, for all necessary adaptive variations are limited by the station occupied by the plant.

If what has been stated is true, and the White Pine requires extra care in order to induce it to perpetuate itself, then it is our business as lumbermen and foresters to study those conditions and plan to conduct our operations so as to maintain the proper soil, shade, moisture and other conditions suited to the growth of this most valuable forest-tree.

Substitutions for this timber are constantly being tried, but for some purposes the White Pine is greatly preferred to other woods, and it will always be in demand.

West Virginia University, Morgantown, W. Va. *L. C. Corbett.*

Bibliographical Notes on American Trees.—I.

To the Editor of GARDEN AND FOREST:

Sir,—That elaborate contribution to dendrological bibliography which Mr. George B. Sudworth has lately offered, in Bulletin 14 of the United States Department of Agriculture, cannot fail to be received as a standard manual of the nomenclature of our trees. It is, therefore, important that errors be pointed out as promptly as may be that other writers may avoid repeating them; and from an examination of a few of the earlier pages of the volume I infer that these errors may prove somewhat numerous. Mr. Sudworth seems to have neglected a considerable number of books which might profitably have been consulted by one who is to give a list of our trees, with nomenclature and citations correct, under the rules adopted in this work. For example, Larix, as a genus distinct from the Linnæan Pinus, is attributed to Adanson (1763), whereas two important dendrological authors restored the genus within the first decade after 1753, namely, Miller in 1759, and Duhamel in 1755. Abies is still farther from being attributable to Jussieu and the year 1789. It was maintained by Hill as early as 1756, and even a year earlier than that by Duhamel, so that to this last-named author belong both Larix and Abies as post-Linnæan genera. And here let me observe that Dr. Britton's *Illustrated Flora* is in need of the same corrections here indicated.

That Picea rubra can hardly be maintained for our Red Spruce has lately been suggested by Mr. Jack (GARDEN AND FOREST, vol. x., 62–64); but the reasons for the retirement of this name, under the rules by which Mr. Sudworth and others guide themselves, are more numerous than Mr. Jack has shown. I suppose that a too implicit trusting to the *Index Kewensis* has hindered our authors from discovering that the Abies rubra of Poiret was at the time of its publication a mere homonym. Even on an earlier page of Poiret this name occurs as a pre-Linnæan synonym of A. excelsa, Poir. But that which, under the rules alluded to, completely invalidates the specific name rubra for any American tree of this group is the fact that, only three years after 1753, Hill published the common European Spruce as Abies rubra, so that Picea rubra fails of applicability to any tree of our country, for the reason that it really belongs, under said rules, to that which is now generally known as P. excelsa.

Catholic University, D. C. *Edward L. Greene.*

Recent Publications.

A Manual and Dictionary of the Flowering Plants and Ferns. By J. C. Willis, M.A., Director of the Royal Botanic Gardens at Ceylon. Cambridge, England. 1897.

This work consists of two parts, the principal one being vol. ii., which is an arrangement in the alphabetical order of their Latin names of all the classes, cohorts and natural orders of plants, besides several thousand genera, including all the British genera, the greater part of the common European and American genera and the principal southern and tropical genera. This volume comprises 428 compactly printed duodecimo pages. Vol. i. is shorter, consisting of little more than 200 pages, and at the outset it was intended, the author says, as a sort of supplement or index to the dictionary. But it was found necessary to broaden this scheme, so that it appears now as a fairly complete treatise on the morphology, classification, natural history and geographical distribution of plants. Mr. Willis justifies the preparation of this part of the book in its present form by the fact that there was really no good text-book on the natural history of plants or their geographical distribution available in English, the morphology in such books as exist being out of date and not based upon evolution. The principles of classification and of evolution are not explained in elementary English text-books on the ground that they are too abstruse, and in advanced books it is taken for granted that students are already familiar with them. But, notwithstanding the form of this little treatise, the original design of it is preserved, so that it well serves the purpose of cross reference to the classified list in Part ii., while as a text-book it may also be expanded to almost any degree by referring for details to Part ii. Besides the mere names, this alphabetical list, by a system of abbreviation and condensation, contains a vast amount of information. The families of plants are treated with much more fullness than in ordinary systematic botanies, while the genera are discussed more briefly, except in cases where they have characters of special interest which distinguish them from the rest of the family. The book would be better if it contained more illustrations, but floral diagrams of the larger families will be found and other figures which illustrate difficult groups within the families. Genera which have economic uses are very fully catalogued, although the products and methods of obtaining them are not generally given. The general arrangement is that of Engler, although sufficient reference is made to the classification of Bentham and Hooker to enable any one to use that system. The nomenclature is chiefly that of the *Index Kewensis*, and the more common and important synonyms of the different genera are given. Altogether, the little book will be very useful to students to whom works of general reference are not available. Even when they are, their bulk as well as their antiquity makes it troublesome to use them. Of course, such detailed information as may be required by specialists is not to be looked for here, but the beginner will find what he needs upon most subjects which do not require the use of a microscope.

Mr. Willis's book is one of the useful Cambridge Natural Science Manuals, and it belongs to the Biological Series which has been prepared under the general editorial supervision of Arthur E. Shipley, M.A., Fellow and Tutor of Christ's College.

Notes.

The colors of the fruiterer's stock have not a little to do with its attractiveness, and at this time the deep rich orange of the Navel fruit from California, the paler color of Messina lemons and large, smooth-skinned grape-fruits, and the brilliant red of tiny Lady apples and of large Baldwins make bright spots in displays which include the more neutral-colored mushrooms, pineapples, Winter Nelis and P. Barry pears, Catawba grapes, and what is probably the last importation of English hot-house grapes, each bunch cut with a piece of the stem. Some of the rough-skinned King of Siam oranges, from California, are now offered, and this novel fruit costs $2.00 a dozen. Other delicacies seen in the windows of fancy-fruit stores are beautiful smooth hot-house tomatoes, perfectly grown cucumbers, blocks of maple-sugar and half-pound pats of "fresh" or unsalted butter done up in white oiled paper, and costing thirty-five cents each.

Mr. George L. Russell recently read an essay before the Board of Trade at Orlando, Florida, on the "Possibilities of Pineapple Culture," which he considers among the most promising of the industries of that state. There is always a demand for the finest fruit. A twelve-inch home-grown sucker will come into bearing in a little more than a year and the structure for properly shading an acre of land need not cost more than $450. Varieties like the Smooth Cayenne, Golden Queen and others of prime quality attain a size of from six to twelve pounds each, and ought to command at retail in northern markets at least a dollar. One great trouble has heretofore been that the tender fruits are injured in transportation, but a kind of crate has been devised which will hold a dozen fruits of the first size, packed in excelsior so as to prevent their bruising, and they will keep in this way at least a fortnight, which will afford ample time for transportation, even to foreign markets.

An article on seed-sowing in *Vick's Magazine* recommends the scattering of fine hay or the clippings of the lawn, just thick enough to lightly cover the soil, over a bed where seed has recently been sown. The advantage of this is that it breaks the sun's rays and, like any other mulch, prevents the rapid drying out of the soil, especially when the wind blows. But it is particularly useful in preventing the surface of the soil from becoming beaten and pasted down by watering or rain. May soils bake after they have been watered, but when the water is sprinkled on so as to filter through the mulch it does not wash the seeds bare nor beat down the surface, and, of course, the shading, too, prevents it from hardening into a brick-like consistency. No general rule can be given as to the depth of sowing seed, and in light sandy soils the covering can be thicker than in those of heavy clay. A seed that has a covering four times as thick as its own diameter is not buried

too deeply, and a simple sifting of soil over the finest kind of seeds after they have been sown upon the surface will suffice, provided the soil is afterward properly pressed against the seed, or "firmed," as it is called. In the case of large seeds gardeners often tramp on the row, and with lighter ones a hoe blade or a block of wood is used for compacting the soil.

The windows in the uptown flower stores make a brave display even during the Lenten season, a comparatively dull trade time. Under the influence of the bright clear weather of these early spring days the masses of bloom show good color and vigor. Sturdy clumps of forget-me-not, the tiny flowers set in abundant foliage, immense pansies of many hues, long stems of lily-of-the-valley, little bunches of yellow primroses, vases of the beautiful blue cornflower, well-grown heliotrope, giant heads of mignonette, and single, and the deeper-colored double, violets are seen in almost all collections. There are also dainty buds of moss roses, great spikes of forced gladiolus and quantities of Easter lilies. White sweet peas make a delicate showing, and one of the windows had a drapery of Swainsonia, the finely cut leaves and clusters of white flowers being peculiarly effective and satisfying. A row of flowering plants of Amaryllis set in a bed of green foliage plants made a gorgeous display, the rich red flowers borne on their stout stems, some of them two feet high. Large yellow and white marguerites, double white snapdragon and beautiful pink tulips and many other bulbous flowers added to the variety, with French lilacs, Jacqueminot, American Beauty and other roses. Hardly any potted plants in flower are shown now, these being held in the greenhouses for Easter, and only a few pots of violets were seen, and the quiet flowers nearly hidden in the luxuriant leaves seemed especially fitting at this time.

Bulletin No. 124 of the Cornell University Experiment Station contains particulars of the pistol-case-bearer, an American insect, which has been known for twenty years, but which has never done any serious damage except occasionally in New York and Pennsylvania. The insect is one of those which are encased in a curious-shaped suit after the fashion of the cigar-case-bearer, and this bulletin gives such an interesting description of the habits of the interesting little animal that no intelligent farmer's boy can fail to be interested if he once begins to read it. Professor Slingerland's work does much more, therefore, than give some immediate information about the pest and the methods of fighting it, it helps to encourage "correct and hopeful habits of thought." Experiments seem to show that the insect can be held in check by a spraying of Paris green or the Bordeaux mixture applied very thoroughly. When it is abundant at least two applications should be made before the blossoms open. If the Bordeaux mixture is applied with the Paris green at the second spraying the apple-scab fungus will receive a check, and this period between the setting of the bud and the opening of the flower is just the time when the bud-moth as well as the cigar-case-bearer needs a dose of poison, since all three of these pests often occur together. If any of the pistol-case-bearers are left they can doubtless be poisoned by an application of Paris green made a little while after the petals fall, and this is also the best time to spray for the codlin moth or appleworm. A fruit tree should never be sprayed while it is in blossom.

Mr. John Craig, of the Canadian Experiment Fruit Farm, read a paper recently before the Michigan Fruit Growers' Association, giving an account of some experiments with the different standard varieties of Peaches and Plums, with a view of testing their relative ability to produce fruit after winters of unusual severity. Twigs of the different varieties bearing fruit-buds were taken from a number of localities in the Dominion and examined with a lens, and most of the cions were placed in water in a glass-house where the blossoms were allowed to expand. Of course, the percentage of fruit buds killed on a Peach-tree is not the measure of loss to the crop the ensuing year. If a fruit set for every bud that opened, thinning would be absolutely necessary, and the frosting of some buds might prove a help to the crop. Again, the specimen twigs may have been largely cut from the lower branches of the trees where the temperature is colder at critical periods than at the top of the tree where the greater part of the fruit is found after severe winters. The tables presented, therefore, of the different varieties of Peaches and Plums grouped in relation to the power of their fruit-buds in resisting frost, are merely tentative, although they have some value as a list subject to revision. Several interesting facts, however, were noted. For example, tender fruit-buds are not always associated with tender leaf-buds. As an instance, the Plum Glass Seedling suffers less than most varieties at Ottowa from the winter-killing of terminal shoots, but it bears no fruit except after very mild winters. Other varieties which have their terminal wood killed back annually, like the Damsons, nevertheless produce fruit regularly on spurs of the older branches. This means that in the north there is much to learn on this subject, and after the selection of varieties of merit and of known hardiness the advice to cultivate so as to encourage the ripening of both wood and fruit-buds is the most practical that can now be given.

The Office of Road Inquiry of the United States Department of Agriculture has published a circular on brick-paving for country roads, which sets forth an experiment made recently by the citizens of Monmouth, Illinois. This vitrified brick, as is well known, is not made of clay, but of a peculiar shale rock, and it is so hard that a sharp-edged fragment of it will cut steel. In accordance with a law which authorized the construction of macadam or other hard roads in Illinois, the landowners of Monmouth have laid an experimental section of vitrified brick road at a cost of about ninety cents a running foot. The road is eleven feet wide, and on either side of it there is an earth track for use in dry weather, making altogether a road forty feet wide. Stone roads in that region have cost seventy cents a running foot for a track eight or nine feet wide, and, of course, the glazed brick makes a much smoother surface. It is suggested that in many places, for example, where there is a short roadway subjected to very heavy traffic, as about factories, mines and railway stations, two parallel strips of these brick, from sixteen to twenty inches wide, could be laid through the middle of the macadam road and gauged so that the wheels of all kinds of vehicles could follow them. The decreased traction would be as great as if steel rails were laid in the macadam, and if properly set they would last a long time under any traffic where a macadam road is justified. It is also pointed out that these strips of brick pavement would make admirable bicycle tracks.

The Wild Garlic, Allium vineale, is not a native of this country, although in Pursh's *American Flora*, published in 1814, it was already reported as common in old fields. It is too well known to need description, and it is one of the most injurious of weeds in the middle Atlantic states; it disfigures lawns; it gives an evil flavor to milk and its products; and, since its bulblets are about the same size as wheat-grains and mature when winter rye and wheat are harvested, these are often ground with the flour and impart a strong flavor to it. Besides this, the bulblets form a varnish-like coating on the rollers of the flour-mills, which makes it necessary to shut down the mill until this gum is washed off. The weed is very difficult of extermination. An acre of land near Germantown, Pennsylvania, was trenched by hand to a depth of three feet, and all the bulbs found were picked out and destroyed, and although the quantity of the Garlic was much reduced, a sufficient number of bulbs escaped to reseed the land within a few years. Hand-pulling just at flowering time is only partially successful, and the cultivation of hoed crops is ineffective by itself. If land is plowed late in the fall, so as to leave the bulbs near the surface and exposed to freezing and thawing, many of them will be killed, and the surviving shoots can be destroyed by spring cultivation, after which oats may be sown or corn can be planted. This process repeated for two years will destroy nearly all the Garlic, and the remaining plants can be exterminated by hand. A bulletin published by the Department of Agriculture gives some very interesting facts in regard to this evil weed, and it recommends, among other remedies, (1) that the soil should be shaved near the surface as often as the shoots appear; (2) that lime should be put liberally on the pastures and meadows to help the grass and crowd out the Garlic, and (3) that hogs should be confined on Garlic patches. It is added that a single drop of carbolic acid on a leaf or shoot will kill the entire plant. Half a teaspoonful of the acid applied so as to strike most of the shoots in a clump as they grow in pastures will kill them all. The cheaper quality of the acid, worth from thirty to forty cents a gallon, is effective, and should be used with little dilution, and applied with a machine-oil can. On the grounds about the White House in Washington, comprising eight acres, an abundant stand of Wild Garlic was nearly all destroyed by a single application of carbolic acid. The cost, including the acid, cans for applying it, and the wages of the boys who did the work, amounted to nearly $10 an acre. The grass was practically uninjured, and during the following season it covered the spots where the Garlic had been destroyed. To complete eradication by this method the land should be carefully looked over during each of two succeeding years in winter or early spring when the plants are not hidden by other vegetation.